



Compensatory Mitigation Practices in the U.S. Army Corps of Engineers U.S. Army Corps of Engineers Working Paper, March 2006

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This paper reports on the current practice and status of compensatory mitigation authorized by the Corps of Engineers regulatory program. There is no existing comprehensive accounting or description of practices. The National Research Council (NRC) report on mitigation success, or lack thereof and described mitigation types several years ago (NRC, 2002). A year earlier, the Draft Report of the Nationwide Permit Programmatic EIS described mitigation decisions as of 2001, but focused primarily on nationwide permits. The Environmental Law Institute (ELI) provided a detailed description and status of two types of compensatory mitigation, mitigation banks and in-lieu fees as of 2001 (ELI 2002), but did not delve into the extent to which those mitigation services were used. This paper is intended to make available more recent data on compensatory mitigation practices authorized by the Corps of Engineers under permits issued under the auspices of Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. This paper summarizes much of the data collected in a Corps of Engineers Institute for Water Resources (IWR) survey, hereafter referred to as the *2005 Corps Survey of District Mitigation Practices*.

BACKGROUND

The goal of compensatory mitigation is to replace affected aquatic resource functions that will be lost or impaired by permitted activities, or to otherwise maintain or improve the overall aquatic environment. Compensatory mitigation may be provided through the restoration, establishment, enhancement, or preservation of aquatic habitats.

Types of Compensatory Mitigation

Compensatory mitigation can be undertaken by the permittee (or authorized agent) to offset impacts associated with a specific project (i.e., a permittee-responsible mitigation project). Individual mitigation projects may be constructed to provide compensatory mitigation for specific activities authorized by Department of the Army permits. The permittee is responsible for the completion and success of the required compensatory mitigation project.

Mitigation banks and in-lieu fee programs are types of consolidated compensatory mitigation that can also be used to offset losses of waters of the United States authorized by Department of the Army permits.

A mitigation bank is a site or suite of sites where aquatic resources such as wetlands or streams are restored, established, enhanced, and/or preserved for the purpose of providing compensatory mitigation in advance of authorized impacts to similar resources (Federal Register 1995). The mitigation bank, not the permittee, is responsible for the completion and success of the compensatory mitigation associated with permits that use the mitigation bank.

In-lieu fee programs involve the restoration, establishment, enhancement, or preservation of aquatic resources through funds paid to a governmental or non-governmental natural resource management entity (Scodari and Shabman 2000). An in-lieu fee program may consist of a single project or a group of projects. In-lieu fee programs do not typically provide mitigation in advance of permitted impacts. There is often a delay between payments into an in-lieu fee program fund and initiation of a mitigation project to offset permitted impacts. The in-lieu fee program is responsible for the completion and success of the mitigation associated with permits that provide funds to that program.

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CORPS 2005 SURVEY ON DISTRICT MITIGATION PRACTICES

Regulatory data on numbers of permit decisions and affected acreage are collected, summarized, and reported regularly by Corps Headquarters. However, detailed information on compensatory mitigation practices, such as the share of permits requiring compensatory mitigation and the type and location of compensatory mitigation (e.g., on-site versus off-site) are not readily available at this time. In 2005, IWR surveyed Corps District regulatory offices using a questionnaire, which is provided in Appendix A, to gather such information. Each District was asked to provide estimates based on best professional judgment when specific data were not already tabulated and readily available. Accordingly, the data on compensatory mitigation practices reported here should be interpreted as estimates that are broadly suggestive of the current compensatory mitigation profile, rather than hard data.

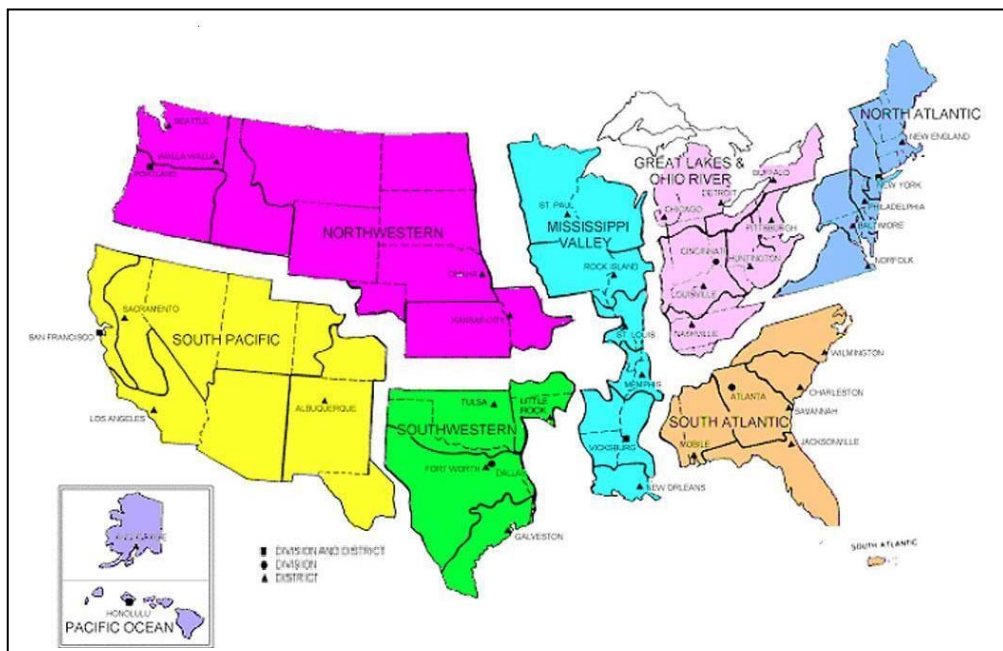


Figure 1. Corps Division and District Regulatory Boundaries.

The data are presented nationally and by geographic regions (i.e., Corps Divisions, see Figure 1). District data were weighted to estimate Division (e.g. regional) shares. For example, estimates of the share of total required compensatory mitigation supplied by different mitigation types (permittee-responsible, mitigation banks, and in-lieu fee programs) are calculated by weighting the reported shares for each District in a Division by the share of total required compensatory mitigation acreage in that Division. Division estimates were weighted in the same manner to calculate national averages. Five of 38 Corps Districts did not respond to the survey and were excluded from weighted averages.

For questions on mitigation shares (e.g., the share of permits for which compensatory mitigation is required), Districts were asked to provide a single estimate for the three-year period of 2002 to 2004. In this paper, reported shares for 2002-2004 were interpreted as Fiscal Year (FY). 2003 estimates so that they could be combined with data on permit authorizations in that year. FY 2003 is the most recent year for which complete records on Department of the Army permits and authorized impacts are available nationally at the time the data compilation was undertaken.

RESULTS

FY 2003 Permits and Impacts

In Fiscal Year 2003, there were 85,878 permit authorizations issued, resulting in impacts to approximately 21,413 acres of wetlands (Table 1). General permits (i.e., nationwide permits and regional general permits) comprised nearly 92 percent of all permits issued, while accounting for only about one-half of the wetland acreage filled (53 percent). Impacts to tidal wetlands represented almost 8 percent of all authorized impacts. Individual permits accounted for nearly 76 percent of those tidal wetland impacts.

Table 1. Permit Authorizations and Aquatic Impacts in FY 2003. Source: Corps Quarterly Permit Data System (QPDS).

Permit Type	Number of Permit Authorizations Issued	Non-Tidal Wetland Impacts Authorized (Acres)	Tidal Wetland Impacts Authorized (Acres)
Individual	7,075	8,767	1,282
General	78,803	10,955	409
Total	85,878	19,722	1,691

Permits Requiring Compensatory Mitigation

In FY 2003, 43,550 acres of wetland compensatory mitigation was required for authorized impacts, including 3,407 acres of tidal wetland mitigation and 40,143 acres of non-tidal wetland mitigation. Nationally, 21 percent of all permits issued in FY 2003 required compensatory mitigation. The share of general permits that required compensatory mitigation was 19 percent; 51 percent of individual permits required compensatory mitigation. See Table 2 for estimates of the share of permits for which some form of compensatory mitigation was required.

The low estimated proportion of permits entailing compensatory mitigation in FY 2003 reflects the fact that many activities authorized by general permits do not typically require compensatory mitigation, because of the nature of those activities or the types of waters of the United States impacted. Examples of activities authorized by general permits that may not require compensatory mitigation include maintenance of existing permitted facilities, pier construction, shoreline stabilization, installation of underwater utilities, minor dredging, temporary access, and cleanup of hazardous wastes.

Similarly, many activities authorized by individual permit may involve only minor or transitory impacts to waters of the United States, and often do not require compensatory mitigation. Individual permits that may not require compensatory mitigation include activities such as dredging projects, ocean disposal of dredged material, commercial or industrial piers and wharves, and shoreline stabilization projects.

Table 2. Estimated Share of Permits Requiring Compensatory Mitigation in FY 2003.

Source: 2005 Corps Survey of District Mitigation Practices and Corps QPDS data.

Corps Division	Number of Permits Issued (FY 2003)	Percentage of Individual Permits Requiring Compensatory Mitigation	Percentage of General Permits Requiring Compensatory Mitigation	Percentage of All Permits Requiring Compensatory Mitigation
Lakes and Rivers	12,924	24	28	21
Mississippi Valley	14,576	86	25	31
North Atlantic	15,829	30	6	6
Northwestern	8,397	91	30	30
Pacific Ocean	1,267	14	8	9
South Atlantic	23,478	72	20	24
South Pacific	4,500	79	69	36
Southwestern	4,907	33	7	10
National Average		51	19	21

Types of Compensatory Mitigation

Permittee-responsible mitigation is estimated to account for 60 percent of all compensatory mitigation acreage in FY 2003, with mitigation banks and in-lieu fee programs providing 33 percent and 7 percent respectively. These national averages mask considerable variation in the estimated use of each mitigation type across Corps Divisions. Table 3 presents estimates of the shares of required compensatory mitigation in FY 2003 that were supplied by different mitigation types (permittee-responsible mitigation, mitigation banks, and in-lieu fee programs).

Nationally, the estimated share of mitigation supplied by mitigation banks is much higher (and the reported share for permittee-responsible mitigation is much lower), than many observers of the permit program have surmised. It is not clear what accounts for this. Since estimates reported in Table 3 are based on the best professional judgment of District staffs, the discrepancy may reflect imprecision in these judgments. Alternatively, the seemingly high estimate of mitigation bank use may reflect an increase in bank use in recent years that has not been fully appreciated by observers of the Corps permit program. Specific data on mitigation shares accounted for by the different mitigation types will not become available until the new Corps automated information system is fully developed and deployed in all Corps Districts. Readers should note that the data reported in Table 3 incorporate estimates of the use of different mitigation types in each District and the acreage of compensatory mitigation provided in that District. Many permits are authorized based on compensatory mitigation decisions that call for use of more than one type of compensatory mitigation for the respective permit. The extent that this would affect mitigation bank share is not estimated in this paper.

Table 3. Estimated Use of Different Compensatory Mitigation Types in FY 2003.

Source: 2005 Corps Survey of District Mitigation Practices and Corps QPDS data.

Corps Division	Permittee-Responsible Mitigation (percent)	Mitigation Banks (percent)	In-Lieu Fee Programs (percent)
Lakes and Rivers	62	32	5
Mississippi Valley	28	64	8
North Atlantic	69	23	9
Northwestern	90	4	6
Pacific Ocean	20	0	80
South Atlantic	70	24	6
South Pacific	80	16	4
Southwestern	58	38	4
National Average	60	33	7

Impacts Compensated Through Mitigation Banks and In-Lieu Fee Programs

Each District estimated the share of total mitigation acreage provided by mitigation banks and in-lieu fee programs as compensation for impacts to three types of aquatic resources: tidal wetlands, non-tidal wetlands, and streams. These estimates are presented in Tables 4 and 5.

The data show that mitigation banks have been used almost entirely to compensate for impacts to non-tidal wetlands. Nationally, only 3 percent of the compensatory mitigation supplied by mitigation banks in FY 2003 was for impacts to tidal wetlands, and only 4 percent was for stream impacts. This contrasts sharply with the distribution provided by in-lieu fee programs in FY 2003. Roughly 14 percent of the compensatory mitigation supplied by in-lieu fee programs was for impacts to tidal wetlands, and 27 percent was compensation for stream impacts.

Table 4. Estimated Use of Mitigation Banks in FY 2003, by Type of Impacted Waters.

Source: 2005 Corps Survey of District Mitigation Practices.

Corps Division	Tidal Wetlands (percent)	Non-Tidal Wetlands (percent)	Streams (percent)
Lakes and Rivers	0	99	1
Mississippi Valley	4	96	0
North Atlantic	0	91	9
Northwestern	0	91	9
Pacific Ocean	0	0	0
South Atlantic	6	87	8
South Pacific	0	98	2
Southwestern	0	84	16
National Average	3	92	4

Table 5. Estimated Use of In-Lieu Fee Programs in FY 2003, by Type of Impacted Waters.

Source: 2005 Corps Survey of District Mitigation Practices.

Corps Division	Tidal Wetlands (percent)	Non-Tidal Wetlands (percent)	Streams (percent)
Lakes and Rivers	0	2	98
Mississippi Valley	29	57	14
North Atlantic	4	77	19
Northwestern	0	10	90
Pacific Ocean	10	53	37
South Atlantic	9	80	11
South Pacific	0	50	50
Southwestern	14	71	15
National Average	14	58	27

Location of Permittee-Responsible Mitigation

Mitigation banks and in-lieu fee programs provide compensatory mitigation for permitted impacts at some distance from the impact sites. Permittee-responsible mitigation, however, can take place on or off the impact site, or consist of a combination of compensatory mitigation activities located both on- and off-site. Permittee-responsible mitigation based on a combination of on-and off-site components is a common practice, and often represents an effort to compensate for specific functions provided by the impacted aquatic resource. For instance, impacts to wildlife habitat are often compensated most effectively off-site than in an area adjacent to the permitted development activity, while impacted resource functions such as flood storage and or maintenance of water quality, may be effectively compensated for on-site.

Corps District estimates suggest that nationally 55 percent of all compensatory mitigation acreage supplied by permittee-responsible mitigation was provided entirely on-site. An estimated eighteen percent was provided entirely off-site and 27 percent was provided by a combination of on-site and off-site compensatory mitigation activities. Table 6 reports these estimates on the location of permittee-responsible mitigation in FY 2003.

Table 6. Location of Permittee-Responsible Mitigation in FY 2003. Source: *2005 Corps Survey of District Mitigation Practices*.

Corps Division	Permittee-Responsible Mitigation On-Site (percent)	Permittee-Responsible Mitigation Off-Site (percent)	Permittee-Responsible Mitigation Combining On-Site and Off-Site (percent)
Lakes and Rivers	56	26	18
Mississippi Valley	49	34	17
North Atlantic	50	18	32
Northwestern	60	19	20
Pacific Ocean	18	18	63
South Atlantic	60	9	31
South Pacific	40	26	34
Southwestern	38	38	24
National Average	55	18	27

Ecological Performance Standards

Ecological performance standards are used to determine whether a compensatory mitigation project is developing into the desired aquatic habitat type and providing the expected functions. As per the Corps of Engineers Regulatory Guidance Letter 02-02, all compensatory mitigation types, including permittee-responsible mitigation, mitigation banks, and in-lieu fee programs, are normally held to some type of performance standards, which would be documented in the specific permit special conditions.

Ecological performance standards are typically based on aquatic resource function and/or structure. For example, ecological performance standards may utilize functional assessment criteria for streams, wetlands, and other aquatic resources. They may also be defined in terms of the physical characteristics of the mitigation projects, such as the criteria in the Corps of Engineers Wetland Delineation Manual (1987 Manual) (Environmental Laboratory 1987), relating to wetland hydrology, soils, and vegetation.

In the *2005 Corps Survey of District Mitigation Practices*, each District was asked to report on the use of performance standards for different mitigation types. Table 7 summarizes the use of different types of performance standards, by Corps Division.

The survey results indicate that ecological performance standards are required for most compensatory mitigation projects regardless of mitigation type. The 1987 Manual criteria are commonly used as performance standards, although more so for certain mitigation types. Nationally, an average of 92 percent of mitigation banks were held to performance standards based at least in part on the 1987 Manual criteria. By contrast, roughly 60 percent of permittee-responsible mitigation and in-lieu fee programs used 1987 Manual criteria to evaluate compensatory mitigation site performance. This difference may reflect that permittee-responsible mitigation and in-lieu fee programs are the primary compensatory mitigation types used to provide compensation for impacts to streams, for which the 1987 Manual criteria are not applicable.

Table 7. Estimated Use of Performance Standards, by Mitigation Type. Source: 2005 Corps Survey of District Mitigation Practices.

Corps Division	Permittee-Responsible Mitigation			Mitigation Banks			In-Lieu Fee Programs		
	1987 Manual criteria (percent)	Functional/ecological standards (percent)	Other standards (percent)	1987 Manual criteria (percent)	Functional/ecological standards (percent)	Other standards (percent)	1987 Manual criteria (percent)	Functional/ecological standards (percent)	Other standards (percent)
Lakes and Rivers	83	83	17	100	83	17	50	75	25
Mississippi Valley	100	100	33	100	100	17	33	67	67
North Atlantic	50	75	25	100	100	0	100	100	0
Northwestern	100	100	0	100	75	0	100	100	0
Pacific Ocean	0	100	0	100	100	100	0	100	0
South Atlantic	60	80	60	60	100	60	50	50	100
South Pacific	50	100	50	100	100	0	100	100	0
Southwestern	50	100	50	75	100	25	67	100	33
National Average	62	92	29	92	95	27	63	86	28

Trends in Commercial and Single User Mitigation Banks

Numbers of commercial banks are increasing more rapidly than the population of single-user banks. Commercial mitigation banks produce compensatory mitigation credits for sale to permit recipients in need of compensatory mitigation. Single user mitigation banks are developed and used by a single entity, such as a state department of transportation, to provide compensatory mitigation exclusively for its own impacts.

Reporting of the number of banks across the country is complicated by what are known as “umbrella banks.” Umbrella mitigation banks can have multiple mitigation sites, but are governed by a single mitigation bank instrument. Umbrella mitigation banks have been used primarily in the single-user mitigation bank mode. However, there are a number of commercial umbrella mitigation banks now in operation, such as the statewide mitigation program operated by the Minnesota Bureau of Water and Soil Resources. Under that program, many individual landowners have restored wetlands for credit production and sale. In the discussion below, however, the Minnesota program as well as any other umbrella mitigation bank is tabulated as a single bank.

Commercial Mitigation Banks

Commercial mitigation bank development increased more than twelve-fold between 1995 and 2001. Although the rate of increase has slowed in more recent years, the number of commercial mitigation banks nearly doubled between 2001 and 2005. Table 8 shows the number of Federally approved commercial mitigation banks at three points in time: 1995, 2001, and 2005.

By 2005, at least 305 commercial mitigation banks had received Federal approval. The greatest increase in commercial mitigation banks from 1995 to 2005 occurred in the Mississippi Valley and South Atlantic Divisions. About 20 percent of all approved commercial mitigation banks had sold out their credit capacity by 2005; more than half of the sold-out mitigation banks were located in the Mississippi Valley Division. Another 149 commercial mitigation banks with a high likelihood of approval are in the proposal stage; roughly 36 percent of these proposed mitigation banks are located in the South Atlantic Division.

Table 8 Trends in the Development of Commercial Mitigation Banks. Source: Estimates for 1995 are from Scodari and Brumbaugh (1996); 2001 estimates are from Environmental Law Institute (2002); 2005 estimates are from the *2005 Corps Survey of District Mitigation Practices*, and District web sites.

Corps Division	1995	2001	2005	Proposed (as of 2005)	Sold Out (as of 2005)
Lakes and Rivers	2	39	43	15	10
Mississippi Valley	1	22	87	36	30
North Atlantic	2	18	40	12	5
Northwestern	0	18	23	10	2
Pacific Ocean	0	0	1	0	0
South Atlantic	5	57	83	54	6
South Pacific	3	16	14	15	5
Southwestern	0	6	14	7	1
Total	13	176	305	149	59

Single-User Mitigation Banks

Single user banks were by far the predominant type of bank developed prior to the issuance of the Federal Mitigation Banking Guidance in 1995. The rate at which new single user banks have been developed has far been outstripped by the rate of increase and numbers of commercial banks. Table 9 presents estimates of the number of established single-user mitigation banks by Corps Division and nationally at three points in time: 1992, 2001, and 2005. Several factors complicate the interpretation of these estimates as trends, however. First, the data for these years were derived from different sources that may not have defined mitigation banks in the same way. The *2005 Corps Survey of District Mitigation Practices*, which was the source for the year 2005 estimate, sought information on the number of Federally-approved single-user mitigation banks in each District. Some Districts reported only those mitigation banks that had received Federal approval in accordance with the 1995 Federal banking guidance. The estimates for 1992 represent single-user mitigation banks developed prior to issuance of the 1995 Federal banking guidance, and the reported estimates for 2001 include a mix of mitigation banks that were and were not certified in accordance with Federal guidelines. Second, it is not clear whether any of the reported data exclude single-user mitigation banks that had been fully debited as of the reporting year. For these reasons, the reported 2005 inventory of single-user mitigation banks likely understates the number of single-user mitigation banks that have been used to provide compensatory mitigation for permits as of that year.

Table 9 Trends in the Development of Single-User Mitigation Banks. Source: Year 1992 and 2001 data are from Environmental Law Institute (1994, 2002) and Brumbaugh and Reppert (1994); Data for 2005 are from the *2005 Corps Survey of District Mitigation Practices*.

Corps Division	1992	2001	2005	Proposed(as of 2005)
Lakes and Rivers	3	6	18	10
Mississippi Valley	9	15	10	8
North Atlantic	4	10	12	5
Northwestern	5	11	5	9
Pacific Ocean	0	0	0	0
South Atlantic	11	24	33	17
South Pacific	11	4	0	0
Southwestern	0	6	8	0
National Total	43	76	86	49

In-Lieu Fee Mitigation Programs

The number of operational in-lieu fee programs grew ten-fold between 1995 and 2001, but then declined by about one-third between 2001 and 2005. Table 10 presents the number of operating in-lieu fee programs in selected years from 1995 to 2005 and the number of discontinued and proposed in-lieu fee programs as of 2005. The decline appears to be due to the discontinuation of many programs in recent years; indeed, the number of in-lieu fee programs that had been discontinued as of 2005 is nearly as great as the number of operational programs in that year. The decline in numbers of in-lieu fee programs over the last several years may be due largely issuance of Federal guidance for the development and use of in-lieu fee mitigation programs in 2000. That guidance established a hierarchy for the use of different mitigation options that favored approved mitigation banks over in-lieu fee mitigation and also called for in-lieu fee mitigation programs to tighten up standards.

Table 10 Trends in the Development of In-Lieu Fee Programs. Source: Year 1995 data are from Scodari and Brumbaugh (1996); year 1999 data are from Scodari and Shabman (2000); year 2001 data are from ELI (2002); year 2005 data are from the *2005 Corps Survey of District Mitigation Practices* and State agency web sites.

Corps Division	Operational In-Lieu Fee Programs				Discontinued In-Lieu Fee Programs	Proposed In-Lieu Fee Programs
	1995	1999	2001	2005	As of 2005	As of 2005
Lakes and Rivers	2	26	34	8	29	1
Mississippi Valley	2	6	20	5	15	1
North Atlantic	2	4	3	5	0	0
Northwestern	1	2	5	5	1	2
Pacific Ocean	0	4	4	4	0	0
South Atlantic	1	7	8	2	7	0
South Pacific	0	3	8	18	0	0
Southwestern	0	1	5	11	0	3
National Average	8	53	87	58	52	7

Compensatory Mitigation Costs to Permittees

The options potentially available to permittees for providing compensatory mitigation include permittee-responsible mitigation, mitigation banks, and in-lieu fee programs. Costs to permittees for these different mitigation types are reviewed briefly below.

Costs of Permittee-Responsible Mitigation

Costs for permittee-responsible mitigation include compliance, time, and risk costs. Compliance costs include costs for identifying and securing compensatory mitigation sites, and preparing mitigation project plans for Corps review and approval. After the District Engineer approves a permittee-responsible compensatory mitigation plan, the permittee incurs compliance costs for the construction, monitoring, and maintenance of the compensatory mitigation project. The time costs of permittee-responsible mitigation include potential opportunity costs of any delay in permit issuance associated with the development and approval of mitigation plans. Risk costs include potential remediation costs if the compensatory mitigation project fails to fulfill its objectives.

Nationwide data on the costs of permittee-responsible mitigation are not available, in part because these costs are not fully observable. Such costs are likely highly variable, however, and driven largely by the nature and size of the permitted impacts, the difficulty of project implementation, and land costs.

Wetland Credit Prices

When a permittee is authorized to provide compensatory mitigation through use of a commercial mitigation bank or in-lieu fee program, the cost to the permittee is the credit price (fee rate) charged for the amount of credits deemed necessary by the District Engineer. When a commercial mitigation bank is used, the permittee pays the mitigation bank a credit price negotiated by the permittee and the bank. When an in-lieu fee program is used, the permittee typically pays a standard fee rate per unit of permitted impact.

There is a considerable variation in wetland credit prices within and across the country. Prices well in excess of \$100,000 per acre or per credit have been reported for some commercial bank and in-lieu fee transactions in rapidly urbanizing regions of the country, such as in the Chicago, Norfolk, Portland, and Wilmington Districts. The range of credit prices charged for wetland compensatory mitigation by commercial mitigation banks and in-lieu fee programs by Corps Division is presented in Table 11. These prices were reported by one or more Districts within each Corps Division in the Corps Survey in 2005. These data are based on a limited set of Corps Districts that responded to the survey questions on wetland credit prices, and may not be fully indicative of the range of wetland credit prices across the country. Nevertheless, these limited data indicate that there is considerable variation in wetland credit prices within and across Corps Divisions.

Table 11 Wetland Credit Prices Charged by Commercial Mitigation Banks and In-Lieu Fee Programs. (Prices are on a per-credit or per-acre basis). Source: 2005 Corps Survey of District Mitigation Practices.

Corps Division	Wetland Credit Prices Charged by Commercial Mitigation Banks	Wetland Credit Prices Charged by In-Lieu Fee Programs
Lakes and Rivers	\$7,000 - \$145,000	\$12,000
Mississippi Valley	\$1,500 - \$100,000	\$18,000
North Atlantic	\$16,000 - \$350,000	\$16,500 - \$350,000
Northwestern	\$40,000 - \$120,000	\$30,000
Pacific Ocean		\$500 - \$30,000
South Atlantic	\$4,000 - \$65,000	\$12,000 - \$122,000
South Pacific	\$400,000	\$125,000
Southwestern	\$2,200 - \$25,000	\$3,000 - \$30,000

Stream Credit Prices

The 2005 Corps Survey of District Mitigation Practices also requested data on credit prices for stream mitigation charged by commercial mitigation banks and in-lieu fee programs in each Corps District. However, only four Districts provided data on the prices of stream credits charged by mitigation banks, and only 11 Districts provided data on stream credit prices charged by in-lieu fee programs. Moreover, while most of the responding Districts reported stream credit prices in terms of linear feet, some Districts reported prices based on other units of measure (e.g., square feet) that are not readily comparable. For those Districts that reported stream credit prices per linear foot, the reported prices charged by commercial mitigation banks ranged from \$45 to \$400, and the reported range of prices charged by in-lieu fee programs was \$15 to \$400.

LITERATURE CITED

Brumbaugh, R. and R. Reppert. 1994. National Wetland Mitigation Banking Study: First Phase Report. IWR Report 94-WMB-4. 80 pp.

Environmental Law Institute (ELI). 1994. Wetland Mitigation Banking. National Wetland Mitigation Banking Study. IWR Report 94-WMB-6. 178 pp.

Environmental Law Institute (ELI). 2002. Banks and fees: The status of off-site wetland mitigation in the United States. 199 pp.

Federal Register. 1995. Federal Guidance for the Establishment, Use and Operation of Mitigation Banks; Notice. Department of Defense, Environmental Protection Agency, Department of Agriculture, Department of the Interior, Department of Commerce, November 28, 1995. Volume 60, No. 228, pp. 58605-58614.

Federal Register. 2000. Federal Guidance on the Use of In-Lieu-Fee Arrangements for Compensatory Mitigation Under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act; Notice. Department of Defense, Environmental Protection Agency, Department of the Interior, Department of Commerce, November 7, 2000. Volume 65, No. 216, pp. 66914-66917.

National Research Council. 2001. Compensating for wetland losses under the Clean Water Act. National Academy Press. Washington, DC. 322 pp.

Scodari, P. and R. Brumbaugh. 1996. Commercial Wetland Mitigation Credit Ventures: 1995 National Survey. National Wetland Mitigation Banking Study. IWR Report 96-WMB-9. 45 pp.

Scodari, P. and L. Shabman. 1995. Commercial Wetland Mitigation Credit Markets: Theory and Practice. National Wetland Mitigation Banking Study. IWR Report 95-WMB-7. 89 pp.

Scodari, P. and L. Shabman. 2000. Review and analysis of in lieu fee mitigation in the CWA Section 404 permit program. Institute for Water Resources. 40 pp.